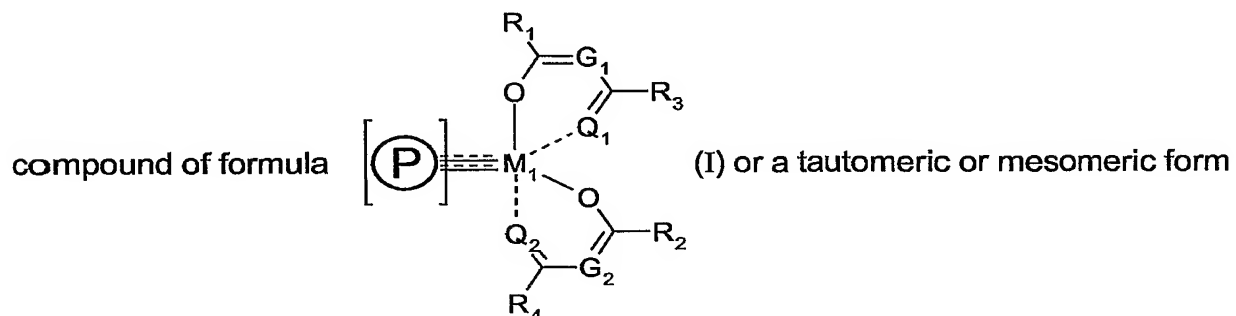


What is claimed is:

1. An optical recording medium comprising a substrate, a recording layer and optionally one or more reflecting layers, wherein the recording layer comprises a



5 thereof, wherein

$G_1$  and  $G_2$  are each independently of the other C( $R_5$ ) or N;

$M_1$  is a lanthanide or transition metal of groups 4 to 10;

$\textcircled{P}$  is a phthalocyanino diradical;

$Q_1$  and  $Q_2$  are each independently of the other O or S,

- 10  $R_1$  and  $R_2$  are each independently of the other  $C_1$ - $C_{12}$ alkyl,  $C_3$ - $C_{12}$ cycloalkyl,  $C_2$ - $C_{12}$ alkenyl or  $C_3$ - $C_{12}$ cycloalkenyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_6$ , or  $C_6$ - $C_{10}$ aryl,  $C_1$ - $C_9$ heteroaryl,  $C_7$ - $C_{12}$ aralkyl or  $C_2$ - $C_{12}$ heteroaralkyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_7$ ;
- 15  $R_3$  and  $R_4$  are each independently of the other hydrogen, hydroxy, S- $R_8$ , O- $R_8$ , O-CO- $R_8$ , OCOOR<sub>8</sub>, NH<sub>2</sub>, NH- $R_8$ , NR<sub>8</sub>R<sub>9</sub>, NHCOR<sub>8</sub>, NR<sub>8</sub>COR<sub>10</sub>, NHCOOR<sub>8</sub>, NR<sub>8</sub>COOR<sub>10</sub>, ureido, NR<sub>8</sub>-CO-NHR<sub>10</sub>, or  $C_1$ - $C_{12}$ alkyl,  $C_3$ - $C_{12}$ cycloalkyl,  $C_2$ - $C_{12}$ alkenyl or  $C_3$ - $C_{12}$ cycloalkenyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_6$ , or  $C_6$ - $C_{10}$ aryl,  $C_1$ - $C_9$ heteroaryl,

C<sub>7</sub>-C<sub>12</sub>aralkyl or C<sub>2</sub>-C<sub>12</sub>heteroaralkyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>7</sub>;

each R<sub>5</sub>, independently of any other R<sub>5</sub>, is hydrogen, or C<sub>1</sub>-C<sub>12</sub>alkyl, C<sub>3</sub>-C<sub>12</sub>cycloalkyl, C<sub>2</sub>-C<sub>12</sub>alkenyl or C<sub>3</sub>-C<sub>12</sub>cycloalkenyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>, or C<sub>6</sub>-C<sub>10</sub>aryl, C<sub>1</sub>-C<sub>9</sub>heteroaryl, C<sub>7</sub>-C<sub>12</sub>aralkyl or C<sub>2</sub>-C<sub>12</sub>heteroaralkyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>7</sub>;

wherein R<sub>1</sub> and R<sub>2</sub>, R<sub>2</sub> and R<sub>3</sub>, R<sub>3</sub> and R<sub>4</sub> or R<sub>1</sub> and R<sub>4</sub> can be linked by a bonding member, or two of R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> can each be linked by a bonding member to one of the two other R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> to form pairs, and each bonding member is a direct bond or a bridge O, S or N(R<sub>8</sub>); or

R<sub>1</sub> forms with R<sub>5</sub> of G<sub>1</sub> and/or R<sub>3</sub> forms with R<sub>5</sub> of G<sub>2</sub> a saturated, mono- or poly-unsaturated or aromatic 5- or 6-membered ring which may optionally contain 1, 2 or 3 identical or different hetero atoms -O-, -S-, -N= or -N(R<sub>8</sub>)-, which ring is unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>7</sub>; and/or

R<sub>2</sub> forms with R<sub>5</sub> of G<sub>1</sub> and/or R<sub>4</sub> forms with R<sub>5</sub> of G<sub>2</sub> a saturated or mono- or poly-unsaturated 5- or 6-membered ring which may optionally contain 1, 2 or 3 identical or different hetero atoms -O-, -S-, -N= or -N(R<sub>8</sub>)-, which ring is unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>;

R<sub>6</sub> is halogen, hydroxy, O-R<sub>11</sub>, O-CO-R<sub>11</sub>, oxo, S-R<sub>11</sub>, thioxo, NH<sub>2</sub>, NH-R<sub>11</sub>, NR<sub>11</sub>R<sub>12</sub>, NH<sub>3</sub><sup>+</sup>, NH<sub>2</sub>R<sub>11</sub><sup>+</sup>, NHR<sub>11</sub>R<sub>12</sub><sup>+</sup>, NR<sub>11</sub>R<sub>12</sub>R<sub>13</sub><sup>+</sup>, NR<sub>11</sub>-CO-R<sub>13</sub>, NR<sub>11</sub>COOR<sub>13</sub>, cyano, formyl, COO-R<sub>11</sub>, carboxy, carbamoyl, CONH-R<sub>11</sub>, CONR<sub>11</sub>R<sub>12</sub>, ureido, NH-CO-NHR<sub>13</sub>, NR<sub>11</sub>-CO-NHR<sub>13</sub>, phosphato, P(=O)R<sub>11</sub>R<sub>13</sub>, POR<sub>11</sub>OR<sub>13</sub>, OPR<sub>11</sub>R<sub>13</sub>, OPR<sub>11</sub>OR<sub>13</sub>, P(=O)R<sub>11</sub>OR<sub>13</sub>, P(=O)OR<sub>11</sub>OR<sub>13</sub>, OP(=O)R<sub>11</sub>OR<sub>13</sub>, OP(=O)OR<sub>11</sub>OR<sub>13</sub>, OPO<sub>3</sub>R<sub>11</sub>, SO<sub>2</sub>R<sub>11</sub>, sulfato, sulfo, R<sub>14</sub>, N=N-R<sub>14</sub>, or C<sub>1</sub>-C<sub>8</sub>alkoxy or C<sub>3</sub>-C<sub>8</sub>cycloalkoxy each unsubstituted or mono- or poly-substituted by halogen;

R<sub>7</sub>, independently of any other R<sub>7</sub>, is R<sub>15</sub>, halogen, nitro, cyano, thiocyano, hydroxy, S-R<sub>8</sub>, O-R<sub>8</sub>, O-CO-R<sub>8</sub>, OCOOR<sub>8</sub>, NH<sub>2</sub>, NH-R<sub>8</sub>, NR<sub>8</sub>R<sub>9</sub>, NHCOR<sub>8</sub>, NR<sub>8</sub>COR<sub>10</sub>, NHCOOR<sub>8</sub>, NR<sub>8</sub>COOR<sub>10</sub>, ureido, NR<sub>8</sub>-CO-NHR<sub>10</sub>, NH<sub>3</sub><sup>+</sup>, NH<sub>2</sub>R<sub>8</sub><sup>+</sup>, NHR<sub>8</sub>R<sub>9</sub><sup>+</sup>, NR<sub>8</sub>R<sub>9</sub>R<sub>10</sub><sup>+</sup>, N=N-R<sub>15</sub>, N=CR<sub>8</sub>R<sub>9</sub>, N=CR<sub>16</sub>R<sub>17</sub>, C(R<sub>18</sub>)=NR<sub>8</sub>, C(R<sub>18</sub>)=NR<sub>16</sub>,

- 5 C(R<sub>18</sub>)=CR<sub>16</sub>R<sub>17</sub>, CHO, CHOR<sub>8</sub>OR<sub>10</sub>, COR<sub>9</sub>, CR<sub>9</sub>OR<sub>8</sub>OR<sub>10</sub>, CONH<sub>2</sub>, CONHR<sub>8</sub>, CONR<sub>8</sub>R<sub>9</sub>, SO<sub>2</sub>R<sub>8</sub>, SO<sub>3</sub>R<sub>8</sub>, SO<sub>2</sub>NH<sub>2</sub>, SO<sub>2</sub>NHR<sub>8</sub>, SO<sub>2</sub>NR<sub>8</sub>R<sub>9</sub>, COOH, COOR<sub>8</sub>, B(OH)<sub>2</sub>, B(OH)(OR<sub>8</sub>), B(OR<sub>8</sub>)OR<sub>10</sub>, phosphato, P(=O)R<sub>8</sub>R<sub>10</sub>, POR<sub>8</sub>OR<sub>10</sub>, P(=O)R<sub>8</sub>OR<sub>10</sub>, P(=O)OR<sub>8</sub>OR<sub>10</sub>, OPR<sub>8</sub>R<sub>10</sub>, OPR<sub>8</sub>OR<sub>10</sub>, OP(=O)R<sub>8</sub>OR<sub>10</sub>, OP(=O)OR<sub>8</sub>OR<sub>10</sub>, OPO<sub>3</sub>R<sub>8</sub>, sulfato, sulfo, or C<sub>1</sub>-C<sub>5</sub>alkyl, C<sub>3</sub>-C<sub>6</sub>cycloalkyl, C<sub>1</sub>-C<sub>5</sub>alkylthio, C<sub>3</sub>-C<sub>6</sub>cycloalkylthio,
- 10 C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy each unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>;

R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> are each independently of the others R<sub>15</sub>, R<sub>19</sub>-[O-C<sub>1</sub>-C<sub>4</sub>alkylene]<sub>m</sub>, R<sub>19</sub>-[NH-C<sub>1</sub>-C<sub>4</sub>alkylene]<sub>m</sub>, or C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>3</sub>-C<sub>8</sub>cycloalkyl, C<sub>2</sub>-C<sub>8</sub>alkenyl or C<sub>3</sub>-C<sub>8</sub>cycloalkenyl each unsubstituted or substituted by one or more, where

- 15 applicable identical or different, halogen, hydroxy, C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy radicals; or

R<sub>8</sub> and R<sub>9</sub> together with the common nitrogen are pyrrolidine, piperidine, piperazine or morpholine, each of which is unsubstituted or mono- to tetra-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl; or

- 20 R<sub>8</sub> and R<sub>10</sub> together are C<sub>2</sub>-C<sub>8</sub>alkylene, C<sub>3</sub>-C<sub>8</sub>cycloalkylene, C<sub>2</sub>-C<sub>8</sub>alkenylene or C<sub>3</sub>-C<sub>8</sub>cycloalkenylene, each of which is unsubstituted or substituted by one or more, where applicable identical or different, halogen, hydroxy, C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy radicals;

R<sub>11</sub>, R<sub>12</sub> and R<sub>13</sub> are each independently of the others C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>3</sub>-C<sub>8</sub>cycloalkyl, C<sub>2</sub>-C<sub>8</sub>alkenyl, C<sub>3</sub>-C<sub>8</sub>cycloalkenyl, R<sub>19</sub>-[O-C<sub>1</sub>-C<sub>4</sub>alkylene]<sub>m</sub>, R<sub>19</sub>-[NH-C<sub>1</sub>-C<sub>4</sub>alkylene]<sub>m</sub>, C<sub>6</sub>-C<sub>10</sub>aryl, C<sub>4</sub>-C<sub>9</sub>heteroaryl, C<sub>7</sub>-C<sub>10</sub>aralkyl or C<sub>5</sub>-C<sub>9</sub>heteroaralkyl; or

- 25

R<sub>11</sub> and R<sub>12</sub> together with the common nitrogen are pyrrolidine, piperidine, piperazine or morpholine, each of which is unsubstituted or mono- to tetra-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl;

5 R<sub>14</sub> is C<sub>6</sub>-C<sub>12</sub>aryl, C<sub>4</sub>-C<sub>12</sub>heteroaryl, C<sub>7</sub>-C<sub>12</sub>aralkyl or C<sub>5</sub>-C<sub>12</sub>heteroaralkyl, each of which is unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>7</sub>;

R<sub>15</sub> is phenyl, C<sub>4</sub>-C<sub>5</sub>heteroaryl, C<sub>7</sub>-C<sub>8</sub>aralkyl or C<sub>5</sub>-C<sub>7</sub>heteroaralkyl, each of which is unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>20</sub>;

10 R<sub>16</sub> and R<sub>17</sub> are each independently of the other NR<sub>11</sub>R<sub>12</sub>, CN, CONH<sub>2</sub>, CONHR<sub>8</sub>, CONR<sub>8</sub>R<sub>9</sub> or COOR<sub>9</sub>;

R<sub>18</sub> is R<sub>15</sub>, hydrogen, cyano, hydroxy, C<sub>1</sub>-C<sub>12</sub>alkoxy, C<sub>3</sub>-C<sub>12</sub>cycloalkoxy, C<sub>1</sub>-C<sub>12</sub>alkylthio, C<sub>3</sub>-C<sub>12</sub>cycloalkylthio, amino, NHR<sub>13</sub>, NR<sub>11</sub>R<sub>12</sub>, halogen, nitro, formyl, COO-R<sub>11</sub>, carboxy, carbamoyl, CONH-R<sub>11</sub>, CONR<sub>11</sub>R<sub>12</sub>, or C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>3</sub>-C<sub>8</sub>cycloalkyl,  
15 C<sub>2</sub>-C<sub>8</sub>alkenyl or C<sub>3</sub>-C<sub>8</sub>cycloalkenyl each unsubstituted or substituted by one or more, where applicable identical or different, halogen, hydroxy, C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy radicals; or

R<sub>8</sub> and R<sub>18</sub> together are C<sub>2</sub>-C<sub>8</sub>alkylene, C<sub>3</sub>-C<sub>8</sub>cycloalkylene, C<sub>2</sub>-C<sub>8</sub>alkenylene or C<sub>3</sub>-C<sub>8</sub>cycloalkenylene, each of which is unsubstituted or substituted by one or more,  
20 where applicable identical or different, halogen, hydroxy, C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy radicals;

R<sub>19</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>3</sub>alkylcarbonyl;

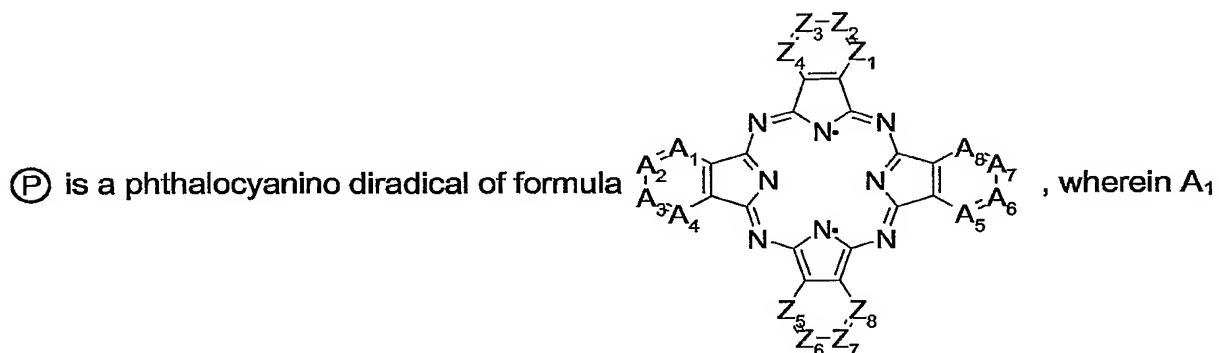
R<sub>20</sub> is nitro, SO<sub>2</sub>NHR<sub>11</sub>, SO<sub>2</sub>NR<sub>11</sub>R<sub>12</sub>, or C<sub>1</sub>-C<sub>8</sub>alkyl, C<sub>3</sub>-C<sub>8</sub>cycloalkyl, C<sub>1</sub>-C<sub>8</sub>alkylthio, C<sub>3</sub>-C<sub>8</sub>cycloalkylthio, C<sub>1</sub>-C<sub>8</sub>alkoxy or C<sub>3</sub>-C<sub>8</sub>cycloalkoxy each unsubstituted or substituted by one or more, where applicable identical or different, halogen, hydroxy,  
25 C<sub>1</sub>-C<sub>5</sub>alkoxy or C<sub>3</sub>-C<sub>6</sub>cycloalkoxy radicals; and

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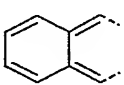
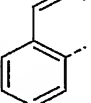
m is a number from 1 to 4.

2. An optical recording medium according to claim 1, wherein  $G_1$  and  $G_2$  are each independently of the other  $C(R_5)$ ;

$M_1$  is a lanthanide or transition metal of groups 4 to 7, especially Ti, Zr or Hf, more especially Zr;



to  $A_8$  and  $Z_1$  to  $Z_8$  are all independently of one another N or  $CR_{24}$ , and each  $R_{24}$  independently of the other  $R_{24}$  is H or  $R_7$ ; or two adjacent  $R_{24}$  together are 1,4-buta-

1,3-dienylene,  or , each of which is unsubstituted or substituted

10 by one or more, where applicable identical or different, radicals  $R_7$  and wherein 1 or 2 carbon(s) may have been replaced by nitrogen; and

$Q_1$  and  $Q_2$  are O;

$R_3$  and  $R_4$  are each independently of the other hydrogen, hydroxy,  $S-R_8$ ,  $O-R_8$ ,  $NH_2$ ,  $NH-R_8$ ,  $NR_8R_9$ ;  $C_1-C_8$ alkyl,  $C_3-C_8$ cycloalkyl,  $C_2-C_8$ alkenyl or  $C_3-C_8$ cycloalkenyl each  
15 unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_6$ ; or  $C_6-C_{10}$ aryl or  $C_1-C_9$ heteroaryl each unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_7$ ;

$R_5$  is hydrogen or forms a 5- or 6-membered ring with  $R_1$  or  $R_2$ ;

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$R_6$  is halogen, hydroxy,  $O-R_{11}$ ,  $O-CO-R_{11}$ , oxo,  $NH_2$ ,  $NH-R_{11}$ ,  $NR_{11}R_{12}$ , or  $C_1-C_4$ alkoxy unsubstituted or mono- or poly-substituted by halogen; and

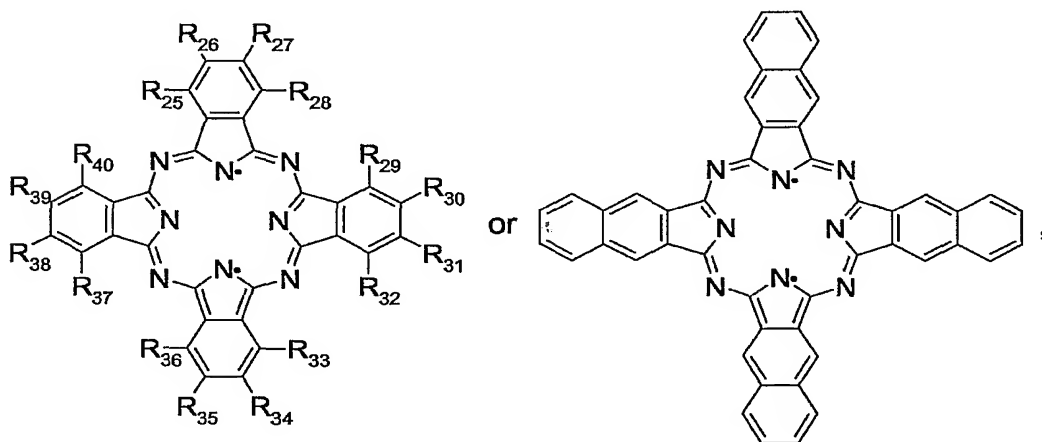
$R_7$  is halogen, nitro, cyano, thiocyno,  $S-R_8$ ,  $O-R_8$ ,  $NH_2$ ,  $NH-R_8$ ,  $NR_8R_9$ ,  $NHCOR_8$ ,  $N=CR_8R_9$ ,  $N=CR_{16}R_{17}$ ,  $CHO$ ,  $CHOR_8OR_{10}$ ,  $COR_9$ ,  $CONR_8R_9$ ,  $SO_2R_8$ ,  $COOR_8$ , or

5  $C_1-C_5$ alkyl or  $C_1-C_5$ alkoxy each unsubstituted or substituted by one or more, where applicable identical or different, radicals  $R_6$ .

3. An optical recording medium according to claim 1 or 2, wherein  $G_1$  and  $G_2$  are each independently of the other  $C(R_5)$ ;

$M_1$  is Ti, Zr or Hf, more especially Zr;

10  $\textcircled{P}$  is a phthalocyanino diradical of formula



wherein  $R_{25}$  to  $R_{40}$  are all independently of one another H, halogen,  $O-R_8$ ,  $S-R_8$ ,  $O-CO-R_8$ ,  $NH-R_8$ ,  $NR_8R_9$ ,  $CH_2OR_{11}$ ,  $CH_2NR_{11}R_{12}$ ,  $C(R_{18})=CR_{16}R_{17}$ ,  $CHO$ ,  $CHOR_8OR_{10}$ ,  $C(R_{18})=NR_8$ ,  $COR_9$ ,  $CR_9OR_8OR_{10}$ ,  $CN$ ,  $COOH$ ,  $COOR_8$ ,  $CONH_2$ ,

15  $CONHR_8$ ,  $CONR_8R_9$ ,  $SO_2R_8$ ,  $SO_2NH_2$ ,  $SO_2NHR_8$ ,  $SO_2NR_8R_9$ ,  $SO_3R_8$ ,  $SiR_8R_9R_{10}$ ,  $POR_8OR_{10}$ ,  $P(=O)R_8R_{10}$ ,  $P(=O)R_8OR_{10}$ ,  $P(=O)OR_8OR_{10}$ ,  $P(=O)(NH_2)_2$ ,  $P(=O)(NHR_8)_2$ ,  $P(=O)(NR_8R_9)_2$ ,  $OPR_8R_{10}$ ,  $OPR_8OR_{10}$ ,  $OP(=O)R_8OR_{10}$ ,  $OP(=O)OR_8OR_{10}$  or  $OPO_3R_8$ , more especially H, halogen,  $O-R_8$ ,  $O-CO-R_8$ ,  $NH-R_8$ ,  $NR_8R_9$ ,  $CH_2OR_{11}$  or  $CH_2NR_{11}R_{12}$ ; and also

Q<sub>1</sub> and Q<sub>2</sub> are O;

R<sub>1</sub> and R<sub>2</sub> are each independently of the other C<sub>1</sub>-C<sub>5</sub>alkyl or C<sub>2</sub>-C<sub>5</sub>alkenyl, each of which is unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>, or phenyl or C<sub>2</sub>-C<sub>5</sub>heteroaryl, each of which is unsubstituted or  
5 substituted by one or more, where applicable identical or different, radicals R<sub>7</sub>;

R<sub>3</sub> and R<sub>4</sub> are each independently of the other hydrogen, hydroxy, S-R<sub>8</sub>, O-R<sub>8</sub>, NH<sub>2</sub>, NH-R<sub>8</sub>, NR<sub>8</sub>R<sub>9</sub>, or C<sub>1</sub>-C<sub>5</sub>alkyl or C<sub>2</sub>-C<sub>5</sub>alkenyl each unsubstituted or substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>, or phenyl unsubstituted or substituted by one or more, where applicable identical or different,  
10 radicals R<sub>7</sub>;

R<sub>5</sub> is hydrogen or forms a 5- or 6-membered ring with R<sub>1</sub> or R<sub>2</sub>;

R<sub>6</sub> is halogen, hydroxy, O-R<sub>11</sub>, oxo, NH<sub>2</sub>, NH-R<sub>11</sub> or NR<sub>11</sub>R<sub>12</sub>; and

R<sub>7</sub> is halogen, nitro, cyano, O-R<sub>8</sub>, NH-R<sub>8</sub>, NR<sub>8</sub>R<sub>9</sub>, CHO, CHOR<sub>8</sub>OR<sub>10</sub>, COR<sub>9</sub>, CONR<sub>8</sub>R<sub>9</sub>, SO<sub>2</sub>R<sub>8</sub>, COOR<sub>8</sub>, or C<sub>1</sub>-C<sub>5</sub>alkyl or C<sub>1</sub>-C<sub>5</sub>alkoxy each unsubstituted or  
15 substituted by one or more, where applicable identical or different, radicals R<sub>6</sub>.

4. An optical recording medium according to claim 1, 2 or 3, wherein the compound of formula (I) contains branched C<sub>3</sub>-C<sub>12</sub>alkyl or branched C<sub>3</sub>-C<sub>12</sub>alkenyl.

5. An optical recording medium according to claim 1, 2, 3 or 4, wherein the recording layer is substantially amorphous.

20 6. An optical recording medium according to claim 1, 2, 3, 4 or 5, additionally comprising a covering layer, wherein substrate, reflector layer, recording layer and covering layer are arranged in that order.

7. An optical recording medium according to claim 1, 2, 3, 4, 5 or 6, which in addition to comprising a compound of formula (I) comprises a metal-free chromophore.

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8. An optical recording medium according to claim 1, 2, 3, 4, 5, 6 or 7, wherein the compound of formula (I) according to claim 1 is substantially amorphous.

9. A method of producing an optical recording medium according to claim 1, 2, 3, 4, 5, 6, 7 or 8, wherein a solution of a compound of formula (I) according to claim 1 is  
5 applied by spin-coating to a grooved substrate.

10. A method of recording or playing back data, wherein the data on an optical recording medium according to claim 1, 2, 3, 4, 5, 6, 7 or 8 are recorded or played back at a wavelength of from 350 to 500 nm.